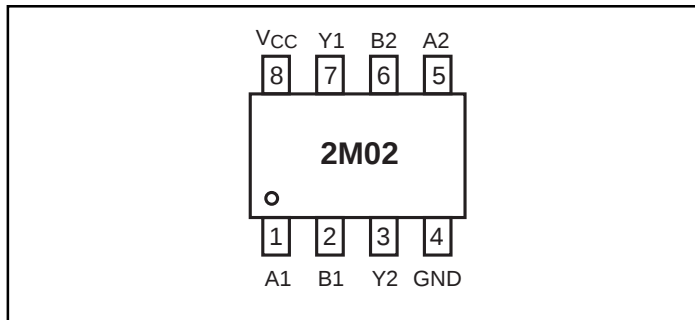




PI74STX2G02

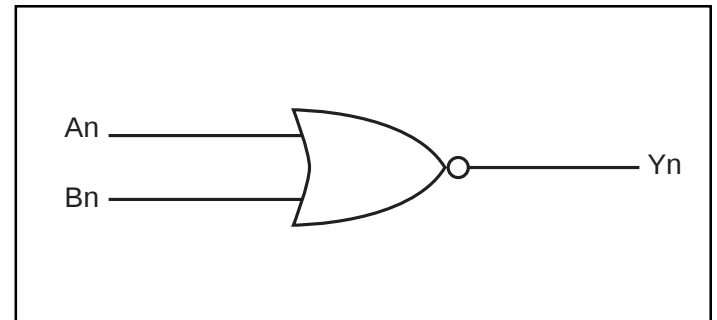
SOTiny™ Logic STX
Dual 2-Input NOR Gate
Features

- High-Speed: $t_{PD} = 2.4\text{ns}$ typical into 50pF @ $5\text{V } V_{CC}$
- Broad Operating Range: $V_{CC} = 1.65\text{V} - 5.5\text{V}$
- Power down high-impedance inputs/outputs
- High Output Drive: $\pm 24\text{mA}$ at $3\text{V } V_{CC}$
- Package: 8-pin space saving MSOP (U)

Pinout**Description**

The PI74STX2G02 is a dual 2-input NOR gate that operates over the 1.65V to $5.5\text{V } V_{CC}$ operating range.

Pericom's PI74STX series of products are produced using the Company's advanced submicron technology.

Block Diagram**Pin Description**

Pin Names	Description
An	Inputs
Bn	Inputs
Yn	Outputs

Function Table

Inputs		Output
A	B	Y
L	L	H
L	H	L
H	L	L
H	H	L

Note:

H = HIGH Logic Level
L = LOW Logic Level

Recommended Operating Conditions⁽¹⁾

Parameter	Condition	Min.	Max.	Units
Supply Voltage (V_{CC})		1.65	5.5	V
Input Voltage (V_{IN})		0	5.5	
Output Voltage (V_{OUT})		0	V_{CC}	
Operating Temperature		-40	85	°C
Input Rise and Fall Time (t_r, t_f)	$V_{CC} = 1.8\text{V}, 2.5\text{V} \pm 0.2\text{V}$	0	20	ns/V
	$V_{CC} = 3.3\text{V}, \pm 0.3\text{V}$	0	10	
	$V_{CC} = 5.0\text{V}, \pm 0.5\text{V}$	0	5	

Note:

1. Unused inputs must be held HIGH or LOW. They may not float.

Absolute Maximum Ratings

Supply Voltage (V_{CC})	–0.5V to +6V	DC Output Current (I_{OUT})	±50mA
DC Input Voltage (V_{IN})	–0.5V to +6V	DC V_{CC}/GND Current (I_{CC}/I_{GND})	±50mA
DC Output Voltage (V_{OUT})	–0.5V to +6V	Storage Temperature (T_{STG})	–65°C to +150°C
DC Input Diode Current (I_{IK})	–50mA to 20mA	Junction Lead Temperature (I_{OS})	260°C
DC Output Diode Current (I_{OK})	–50mA to 20mA	Power Dissipation	300mW

Note:

Absolute maximum ratings are DC values beyond which the device may be damaged or have its useful life impaired. The datasheet specifications should be met, without exception, to ensure that the system design is reliable over its power supply, temperature, and output/input loading variables. Pericom does not recommend operation outside datasheet specifications.

DC Electrical Characteristics (Over supply voltage and operating temperature ranges, unless otherwise specified)

Symbol	Parameter	V_{CC} (V)	Conditions		$T_A = +25^\circ\text{C}$			$T_A = -40 \text{ to } +85^\circ\text{C}$		Units
					Min.	Typ.	Max.	Min.	Max.	
V_{IH}	HIGH Level Input Voltage	1.65-1.95 2.3-5.5			$0.75V_{CC}$ $0.70V_{CC}$			$0.75V_{CC}$ $0.70V_{CC}$		V
V_{IL}	LOW Level Input Voltage	1.65-1.95 2.3-5.5					$0.25V_{CC}$ $0.30V_{CC}$		$0.25V_{CC}$ $0.30V_{CC}$	
V_{OH}	HIGH Level Output Voltage	1.65	$V_{IN} = V_{IL}$	$I_{OH} = -100\mu\text{A}$	1.55	1.65		1.55		
		2.3			2.2	2.3		2.2		
		3.0			2.9	3.0		2.9		
		4.5			4.4	4.5		4.4		
		1.65			1.29	1.52		1.29		
		2.3		$I_{OH} = -4\text{mA}$	1.9	2.15		1.9		
		3.0		$I_{OH} = -8\text{mA}$	2.4	2.80		2.4		
		3.0		$I_{OH} = -16\text{mA}$	2.3	2.68		2.3		
		4.5		$I_{OH} = -24\text{mA}$	3.8	4.20		3.8		
		4.5		$I_{OH} = -32\text{mA}$						
V_{OL}	LOW Level Output Voltage	1.65	$V_{IN} = V_{IH}$	$I_{OL} = 100\mu\text{A}$		0.0	0.1		0.1	μA
		2.3				0.0	0.1		0.1	
		3.0				0.0	0.1		0.1	
		4.5				0.0	0.1		0.1	
		1.65				0.08	0.24		0.24	
		2.3		$I_{OL} = 4\text{mA}$		0.10	0.3		0.3	
		3.0		$I_{OL} = 8\text{mA}$		0.15	0.4		0.4	
		3.0		$I_{OL} = 16\text{mA}$		0.22	0.55		0.55	
		4.5		$I_{OL} = 24\text{mA}$		0.22	0.55		0.55	
		4.5		$I_{OL} = 32\text{mA}$						
I_{IN}	Input Leakage Current	0-5.5	$V_{IN} = 5.5\text{V}, GND$				±0.1		±0.1	μA
I_{OFF}	Power Off Leakage Current	0.0	V_{IN} or $V_{OUT} = 5.5\text{V}$				1		10	
I_{CC}	Quiescent Supply Current	1.65-5.5	$V_{IN} = 5.5\text{V}, GND$				1		10	

AC Electrical Characteristics

Symbol	Parameter	V _{CC} (V)	Conditions	T _A = +25°C			T _A = -40°C to +85°C		Units	Fig. No.
				Min.	Typ.	Max.	Min.	Max.		
t _{PLH} , t _{PHL}	Propagation Delay	1.8 ±0.15 2.5 ±0.2 3.3 ±0.3 5.0 ±0.5	C _L = 15pF, R _L = 1MΩ	2.0 1.2 0.8 0.5	5.4 3.3 2.5 2.0	9.8 5.4 3.8 3.0	2.0 1.2 0.8 0.5	10 5.8 4.1 3.3	ns	1 3
t _{PLH} , t _{PHL}	Propagation Delay	3.3 ±0.3 5.0 ±0.5	C _L = 50pF, R _L = 500Ω	1.2 0.8	3.1 2.4	4.6 3.7	1.2 0.8	5.0 4.0		1 3
C _{IN}	Input Capacitance	0			2.5				pF	
C _{PD}	Power Dissipation Capacitance ⁽²⁾	3.3 5.0			13.5 17.5					2

Notes:

- C_{PD} is defined as the value of the internal equivalent capacitance which is derived from dynamic operating current consumption (I_{CCD}) at no output loading and operating at 50% duty cycle (see Figure 2). C_{PD} is related to I_{CCD} dynamic operating current by the expression: I_{CCD} = (C_{PD})(V_{CC})(f_{IN}) + (I_{CC} static).

AC Loading and Waveforms

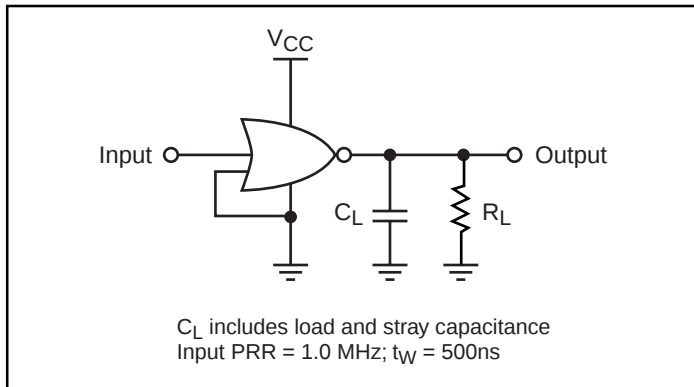


Figure 1. AC Test Circuit

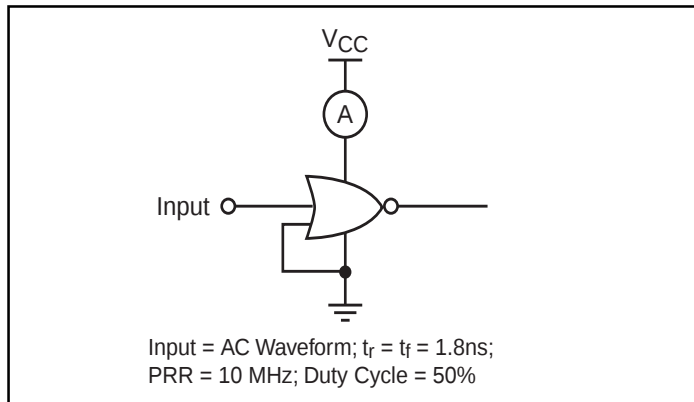


Figure 2. I_{CCD} Test Circuit

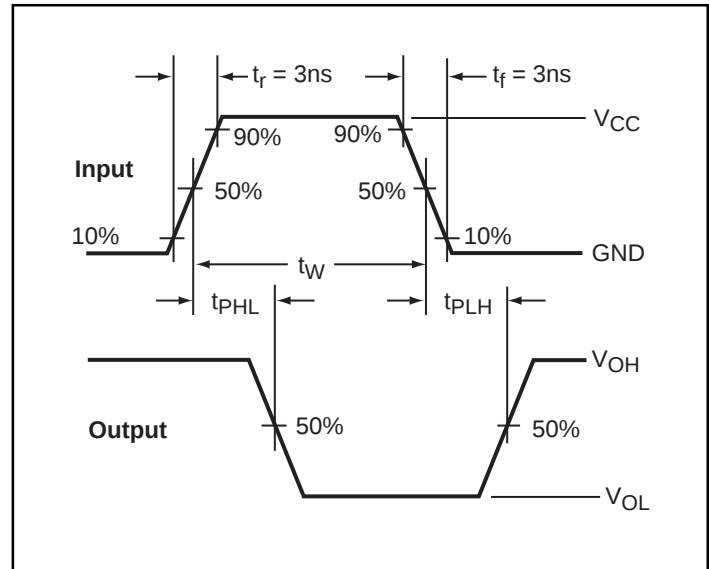
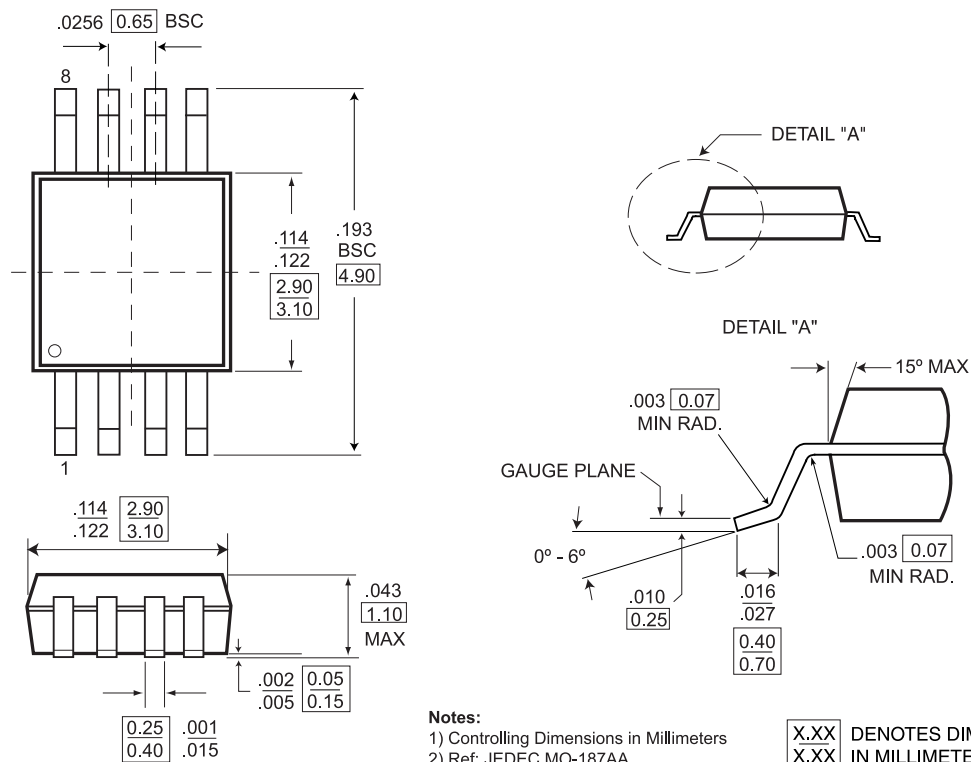


Figure 3. AC Waveforms

8-Pin MSOP (U) Package



Ordering Information

Part	Pin-Package	Top Marking	Operating Range
PI74STX2G02UX	8-Pin - MSOP	2M02	-40°C to 85°C